HAYNES, J. R.

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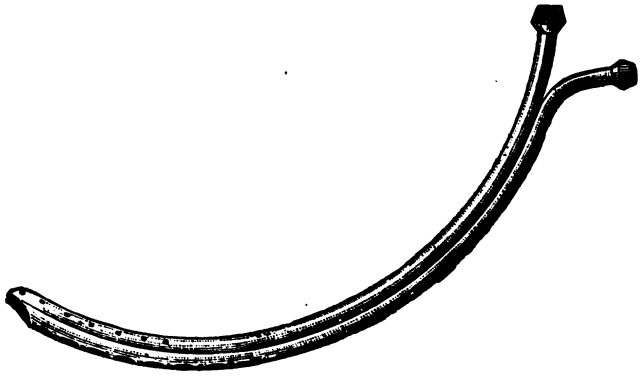
THE following appliances should be carried to every case of miscarriage:

1. Irrigating bag, with glass tips.
2. Double uterine irrigating tube (diameter ¼ in.).
3. Sharp curette, strong but with flexible shank.
4. Sublimate tablets or powders (each containing sublimate, 7 grs., tartaric acid, 35 grs., 1 to a pint represents a solution of 1 to 1000).
5. Sublimate or iodoform-sublimate gauze (rollers ½ inch wide), stored in preserving jar (12 per cent. iodoform and 1-1000 sublimate).
6. Speculum (Nott's trivalve, with short blades); Sim's speculum.
7. Applicator (C. H. Thomas' probe pointed forceps). Steel dilator (Goodell's large instrument with blades crenated).
8. Strong bullet forceps.
9. Strong short blunt vulsellum forceps.
10. Price's fenestrated sponge forceps with roughened tips.

11. Inflatable rubber pad (or two yards of rubber cloth). Ether, nail-brushes, soap.



Double irrigating tube. Diameter, ¼ inch. A deep groove runs along either side and serves to discharge the irrigating fluid, should the reflow tube become obstructed. A large opening at end of reflow tube makes its cleansing easy.

The instruments should be kept in a covered copper pan (14 in. long, 7 in. broad and 3 in. deep), which serves as a boiler, and with its lid (1½ in. deep) as a tray on which to spread them while in use. The boiler and other appliances mentioned should be kept constantly ready for use in a suitable bag ("telescope").

They should be kept clean and thoroughly boiled in a 1 per cent. solution of potassium bicarb. (to prevent rusting) before and after using. (The free use of coal oil is of value in cleaning instruments.) Irrigators should be disinfected after use. Nail brushes should be washed and boiled.

Should no gauze be at hand a substitute may readily be extemporized by boiling a roller bandage ½ in. wide, made from a clean sheet, for fifteen minutes in sublimate solution 1-1000.

The hands of the physician and the vulva and vagina of the patient should be disinfected prior to a vaginal examination, with as much care as that which should be used before a surgical operation.

I will assume that an examination has been made and that abortion is considered inevitable. What course should the attendant pursue? His treatment will depend on the circumstances of the case.

1. *The pregnancy is of less than eight weeks' duration,* there is but little bleeding or pain at the time of your visit, the finger cannot be passed into the uterus.

If the patient is near at hand so that you may be readily called, do nothing at your first visit except to enjoin confinment to the house, abstinence from decided exertion, and copious hot vaginal injections. Very many of these cases terminate spontaneously by the expulsion of the uterine contents without further treatment. (It is my firm conviction, however, that most cases left to nature leave the patient with subinvolution or endometritis.)

If, however, the patient is not very accessible, you will pursue the following course, having first etherized the patient: She is placed on a table and the hips brought well to its edge. The rubber pad is adjusted so as to protect the clothing, and the legs are held out of the way by the following method:

A sheet is twisted diagonally into a rope and placed over one shoulder, across the back and under the opposite axilla. The thighs are well flexed on the abdomen and the legs on the thighs, the limbs encircled below the knees with the ends of the sheet which are secured by a knot placed on the outside of either leg. In this way the extremities are kept well out of the operator's way.

The vulva is washed with soap and water and the pudendal hair clipped, or, better, the parts are shaved; next the vulva and vagina are thoroughly scrubbed with hot water and soap, and irrigated with hot water, and then with sublimate solution 1-4000. The speculum is introduced, the anterior cervical lip held by the bullet forceps, and with the aid of the applicating forceps and sound, as long a strip as possible of antiseptic gauze is introduced, taking every precaution to prevent the gauze from becoming infected by touching surrounding objects. Next the vagina is rapidly packed with iodoform sublimate gauze. Several layers of gauze are now applied over the vulva and secured in place by a T bandage.

In from twelve to twenty-four hours, or sooner, if required by urgent symptoms, a second visit is made, and frequently you will find that the ovum and decidua have been expelled. If this has been the case, introduce the finger into the uterus to make certain that no portion of the decidua remains to cause future trouble, and wash out the uterus through a double tube with water as hot as the hand can bear. If, however, you cannot introduce the finger, and from their appearance you are certain that the ovum and decidua have been expelled entire, in the absence of symptoms, you merely prescribe copious hot water injections. Should you decide from the size of the uterus or from the appearance of the decidua that something remains in the uterus, either scrape with curette or dilate with Goodell's dilator and use the finger nail. When in doubt as to the presence of the decidua, act as if you were certain that the decidua remained. If, on removing the vaginal tampon, you find that the contents of the uterus have not escaped, place your

patient in the position described, etherize and with the finger carefully shell out the ovum and decidua.

If the packing has not dilated the cervix sufficiently to admit the finger, introduce the speculum, seize the anterior cervical lip with vulsellum forceps, and cautiously dilate with Goodell's dilator, changing the position of the dilator frequently during the process, so that an equal amount of pressure may be made on every portion of the cervix.* Now use the finger as just directed, and then wash out the uterus with very hot water, through the double tube. Frequently the fingers may be used as dilators, beginning with the little finger and next using the index. (The bladder must always be evacuated as a preliminary to dilation of the cervix, etc.)

When using the finger as a curette, use the index, introducing the entire hand into the vagina if necessary, and keeping the uterus applied to the curetting finger by pressure applied with the left hand through the abdominal walls. Frequently the uterus may be pushed down almost to the mouth of the vagina, and its interior thoroughly cleaned without

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* The dilator is introduced, its blades are separated slightly, then brought together, and the instrument withdrawn, introduced in another position. the blades expanded a little more than at first, brought together and withdrawn a second time. This process is repeated until the entire circumference of the cervical canal has been subjected to a nearly equal amount of dilating force, and until the finger can be introduced. With patience and gentleness almost all cervices may be dilated to the full capacity of Goodell's instrument (though this is not always necessary) without producing visible laceration. It is not contended that the cervical tissues escape minute lacerations, but the experience of antiseptic gynæcologists, all over the world, proves that these heal at once and without bad effects. (See Howard Kelly on "A death produced by a uterine dilator, with some remarks on the proper method of using the dilator."—*Amer. Journ. of Obstetrics*, Vol 24. No. 1 1891.)

The coming method of dilating is undoubtedly by hydrostatic pressure, with rubber bags inflated with some machine like the rotary pump.

introducing the hand into the vagina. Working through a small orifice, it is often difficult to extract loosened portions of the embryo; here Price's forceps answer well. The ordinary placenta forceps of the shops are useless.

2. *The decidua of an embryo of eight weeks, or less* remains behind, as is evinced by hemorrhage, offensive discharge, pain or fever, the embryo having escaped. (All or any of these symptoms may be absent; bleeding is present in nearly every case.)

If the cervix will admit the finger, etherize and scoop out the offending body. If it will nearly admit the finger, dilate slightly with the finger or with Goodell's dilator, and shell out. If the os be firmly closed and the symptoms not urgent, tampon the cervix and vagina with iodoform gauze, then wait twenty-four hours, and if you still find it impossible to insert the finger, gently but firmly pass the curette over the entire endometrium. A little fluffy material is all you will sometimes get; at other times you will be astonished to see a big piece of decidua pass. In most cases no dilation is required to use the curette. When large masses of decidua or placenta are present do not use the curette, but the finger. But the curette is excellent for the removal of small placental or decidual tufts. In deciding whether to use it, you may be guided to a great extent by the size of the uterus, as marked by bimanual examination.

In one class of cases the curette should never be used; *i.e.* when to the examining hand, the uterus conveys the sensation of extreme softness. Such a uterus is readily perforable. Hoffman of Philadelphia reports a case in which this accident occurred; and Francis Haynes has reported two more. If the

case is properly selected and due care is used, I believe perforation would never occur.

In using the curette, fill the speculum with 1-6000 sublimate solution and curette through it, or let your assistant throw a stream of hot water on the cervix during the process. Having loosened the decidua, you will sometimes have difficulty in getting it out of the uterus. Introduce two fingers behind the uterus in the vagina and press with the other hand on the uterus through the abdominal walls, or use Price's sponge forceps, or slender ovarian pedicle forceps. Before and after all these procedures use through a double tube large quantities of hot water, followed in septic cases by sublimate solution (one pint of 1-4000), then by hot water to wash out the sublimate solution. In septic cases, peroxide of hydrogen, injected very slowly until it ceases to produce frothing and followed finally by iodoform-ether-glycerine emulsion should also be used. (At least half an hour may often be spent to advantage in disinfecting the uterus after removing putrefied matter.)

3. *The product of conception is said to have passed,* there are no symptoms, but on careful bimanual examination the uterus is found to be larger than it should be after a miscarriage. Here a very knotty problem presents itself. The embryo has been thrown away together with a mass of blood clot or something which the nurse cannot describe, and twenty-four hours later the physician is called in to decide whether "everything has passed." My practice in such cases, where I find the uterus larger than it should be, even if other symptoms are entirely wanting, is to explore the uterine cavity, giving ether if required to accomplish the work thoroughly, and, if anything is found, to remove it in the manner already described. Very rarely will the physician

fail to find something, and even if he should fail, the thorough irrigation of the uterus with which he accompanies all his procedures, will have an excellent effect in promoting involution.

4. We will suppose that the physician under circumstances similar to those described under the third heading, finds the uterus small and hard, but that the patient is still bleeding, or that the bleeding, though slight, persists for a longer time than it should. Here the use of the sharp curette by removing a small amount of decidua will prevent a tedious illness, and is always to be advised. Ether may generally be omitted.

5. *Abortion during the third and fourth months.* If the symptoms are not urgent, wait from twelve to twenty-four hours; after that if labor has not terminated spontaneously, etherize and empty the uterus. You can generally introduce the finger without using the dilator, but if not, use it gently, or use gauze. The preferable method, if the cervix is not dilated, is to crowd the entire uterus and cervix with gauze, and wait from twelve to twenty-four hours for nature to do the work.

If the symptoms are urgent, and enough working room cannot be made with steel dilators without danger of lacerating the cervix, use Barnes' bags, with or without the rotary pump, and scoop out the contents of the uterus at once.

6. *After the fourth month,* the treatment is the same as that described in the last paragraph, except that you should give nature more time to dilate the cervix, if possible, as it is not desirable to dilate hastily to such an extent as would be required to allow such a large sized head to pass. The head may, however, be readily crushed with perfect safety to the mother.

Dilation by packing the uterus, cervix and vagina with iodoform gauze is a rule safe and efficient when strict antisepsis is employed, but it acts slowly, except when it provokes powerful uterine contractions. Goodell's dilator is here useless except to prepare for Barnes' dilator, which is the best dilator for urgent cases of advanced pregnancy.

Where a dead embryo is softened by prolonged retention in the uterine cavity, it may readily be dismembered by the fingers or by pedicle forceps, and thus extracted through a comparatively small opening.

7. *The patient has pelvic inflammation complicating an abortion.* Empty the uterus at once, making no traction on the cervix during the process; use the most minute antiseptic precautions, including a patient cleaning of the endometrium with peroxide of hydrogen, and injection of iodoform emulsion. Ample experience has taught that such a course will generally be followed by the speedy recovery of the patient. Should, however, the pelvic inflammation still progress, the abdomen should be opened, collections of fluid evacuated, the ovaries and tubes removed, if found diseased, and drainage employed.

8. *Where the uterus cannot be emptied* as in some rare cases of retroflexion, or where the uterus and tubes are profoundly infected in neglected cases, total vaginal extirpation of the uterus, tubes and ovaries offers a promise of success in otherwise hopeless cases.

9. *Hemorrhage* is almost always checked by emptying the uterus, followed by thorough kneading through the abdominal walls and irrigation with hot water. If not, the womb may be washed out with hot vinegar, or with a hot solution of acetic acid

(5 per cent.). Should these means fail, the cavity of the uterus may be thoroughly packed with a long strip of iodoform gauze, and the womb firmly compressed bimanually until bleeding entirely ceases.

If the patient becomes collapsed from loss of blood, a quart of salt solution (six drachms to a gallon of distilled water, at the temperature of 100° to 105°) may be injected into the submammary connective tissue, through an aspirator needle connected by rubber tubing with a large piston syringe.

Large doses of strychnine should be administered hypodermatically.

AFTER TREATMENT.—Rest, nearly absolute, for two weeks, and modified for two weeks more; the internal use of ergot (Squibbs' fl. ext.) one-third drachm, with hydrastis (Squibbs' fl. ext.) one-half drachm thrice daily for at least ten days, copious hot water injections twice daily per vaginam, and uterine injections with double tube if temperature rises higher than 100° (unless the fever is explained by local inflammation). The dorsal position should be avoided as much as possible, as tending to produce retroflexion.

In my opinion, it is best to omit vaginal injections from the after treatment of a non-febrile patient unless you have a careful "antiseptic" nurse. The application of two teaspoonfuls of a mixture of equal quantities of iodoform and boric acid to the cervix undoubtedly aids in keeping the vagina pure.

Iron should be given with caution immediately after miscarriage, as, beyond doubt, it tends to promote hemorrhage. Quinine, strychnine, and arsenic are more useful tonics.

GENERAL REMARKS.—Tents should never be used either in cases of abortion or for any other purpose.

They are deadly instruments and their victims are legion.

Dilation by gauze ~~packing~~ of the cervix is the ideal method; but it is sometimes tedious. The gauze should be renewed daily.

Thomas' glass plugs merit a trial as dilating agents, in suitable cases.

During an abortion the patient should avoid the water-closet, as there is some reason to think that germs from that source have produced sepsis.

At the risk of becoming tiresome let me insist upon the necessity of strict antisepsis in each and every detail of the procedures described, upon the advantage of placing the patient in a convenient position, and upon the use of the double tube and fountain syringe. Ether should generally be used except for mild curettement.

Leave nothing behind that should be removed. Watch the temperature: a rise indicates deficient antisepsis in the very great majority of cases. Infection is not generally attended by a foul discharge. He who declines to treat a case as septic because of the absence of the ordinary signs of decomposition, will have many mistakes to mourn and many patients will mourn with him.

I am aware that many practitioners of the pre-antiseptic era, will object to such heroic methods as those, I, in common with many other writers, have advocated. These methods have been thoroughly tried and I confidently claim for them the following advantages, over the older plans:

1. A smaller mortality. There will be no deaths, if the physician is summoned early.

2. The duration of illness at the time will be much shortened.

3. The uterine diseases almost invariably following the older plans will with these methods be conspicuous by their absence.

4. Fungous endometritis and salpingitis may be especially mentioned as diseases which follow many cases of neglected miscarriage, and which are almost invariably prevented by a thorough cleansing of the endometrium.

CASES.

1. IIpara; taken at sixth week with flooding; a neighboring physician was called, but, as the patient expressed it, he did nothing except to "give those black drops (ergot) and say it would come all right." For five weeks the patient bled, when the writer was summoned; patient weak, nervous, and anæmic. She was etherized, the womb was gently pushed down by the hand, the finger pushed with some difficulty to the fundus, and a mass of decidua size of a hickory-nut removed. Rapid recovery.

The uterus should have been evacuated by the practitioner who first saw the case, either by curette or by the finger after dilation.

2. Ipara, abortion at six weeks. Five weeks after, I was summoned because of constant oozing. The uterus was small, cervix hard, and os contracted. Ether; dilation with some difficulty by Goodell's dilator; removal of small tufts of decidua size of pin-head by finger. Rapid recovery.

Here all that was required was the gentle application of the curette, without ether, under strict antisepsis. The size of the uterus should have informed me of the true state of the case.

3. VIpara; was summoned to check moderate hæmorrhage after an abortion at eight weeks. Uterus large, os somewhat patulous. The curette, without ether, brought but little away, but next day a very

large piece of decidua passed. Rapid and complete recovery.

Here, again, the large size of the uterus should have warned me that this was not a case for the curette. I should have etherized, dilated with finger or with Goodell's instrument, and cleaned out the womb with the finger.

4. Nullipara, unmarried. I saw the patient seven days after the expulsion of an eight weeks embryo, which had been brought about by probing the uterus with a knitting-needle. The pulse was 140, temperature 104°; abdominal pain, tenderness, and ballooning; offensive bloody discharge; finger was introduced to internal os, where a fragment of decidua was detected; ether, thorough disinfection of genital canal, removal of several pieces of decaying decidua by the finger (they could not have been removed by the curette, as they were tightly adherent). The vagina and then the uterus were now thoroughly washed out again by double tube and fountain syringe, using first two quarts very hot water, then a quart of hot sublimate solution 1-10,000, then two quarts of hot water. Rapid recovery.

A point I wish to emphasize is this: Disinfect from below upward; first the vulva, then the vagina, then the cervical, then the corporeal endometrium. Then you will make certain that you are not carrying septic matter upward with fingers or instruments.

5. Multipara, pregnant five months. Stinking reddish discharge, escape of amniotic fluid; general health failing. As the patient was extremely frail, it seemed important that if miscarriage were inevitable, it should take place as soon as compatible with safety. As no pains were present, it seemed that

the case might linger for weeks or months. A consultation decided that the bag of waters had ruptured and that miscarriage could not be prevented. The hands of the attendants and the instruments were thoroughly disinfected. The vagina was irrigated with hot water and 1-4000 sublimate solution, cervical canal thoroughly swabbed out and irrigated with 1-1000 sublimate solution, using the bivalve speculum. The cervix was steadied by bullet-forceps and three or four strips of iodoform gauze, four inches long and one-half inch broad, pushed into the cervical canal with the sound, and retained in place by borated cotton tampon. Next day cervix would admit index finger; no pains. The canal was again thoroughly irrigated, and as much iodoform gauze as possible gently inserted into uterus and cervix, and a borated tampon applied; labor pains; dead fetus delivered in twenty hours; placenta, which was adherent, carefully removed in one piece under chloroform. It was unnecessary to insert more than the finger, and the uterus was pushed down to meet this by the hand on the abdomen. The uterus and vagina were thoroughly washed out. Throughout the most scrupulous cleanliness was observed, and the genitals were kept pure by frequent irrigations with hot water and weak sublimate solutions. Rapid recovery without slightest rise in temperature.

This patient was probably saved a long illness by prompt, yet safe, treatment.

6. A young Englishwoman aborted at three months. Dr. K. who attended her supposed that everything had passed. One month afterwards, Francis Haynes saw the case in consultation. The temperature was 105°, pulse 130; chills, vomiting

and purging, severe pain over the liver. Uterus somewhat enlarged. The finger would not enter the cervix. Goodell's dilator was used, and about half an ounce of adherent placenta scraped from the fundus by the finger nail. Rapid recovery.

No foul discharge had been noticed, and the placenta was not decomposed. The diagnosis was septicæmia, and the uterus was explored as a matter of course, as affording the most probable source of infection in view of the history of miscarriage.

7. Miscarriage at three and a half months. Nurse assured attendant that the fetus and entire placenta had passed. In three weeks the physician was again called, and found the patient flooding and suffering from chills. A large placenta was removed, and the patient recovered promptly.

Obviously the uterus should have been explored at the first visit.

8. A multipara, three months pregnant; injected a strong solution of sulphate of zinc into the uterus. A hæmatocele of immense size formed in the pelvis at once, and intense suppurative pelvic peritonitis set in. The fetus and membranes were shortly expelled. She was carefully watched and the uterus and vagina kept in an aseptic condition. Death ensued in eight days.

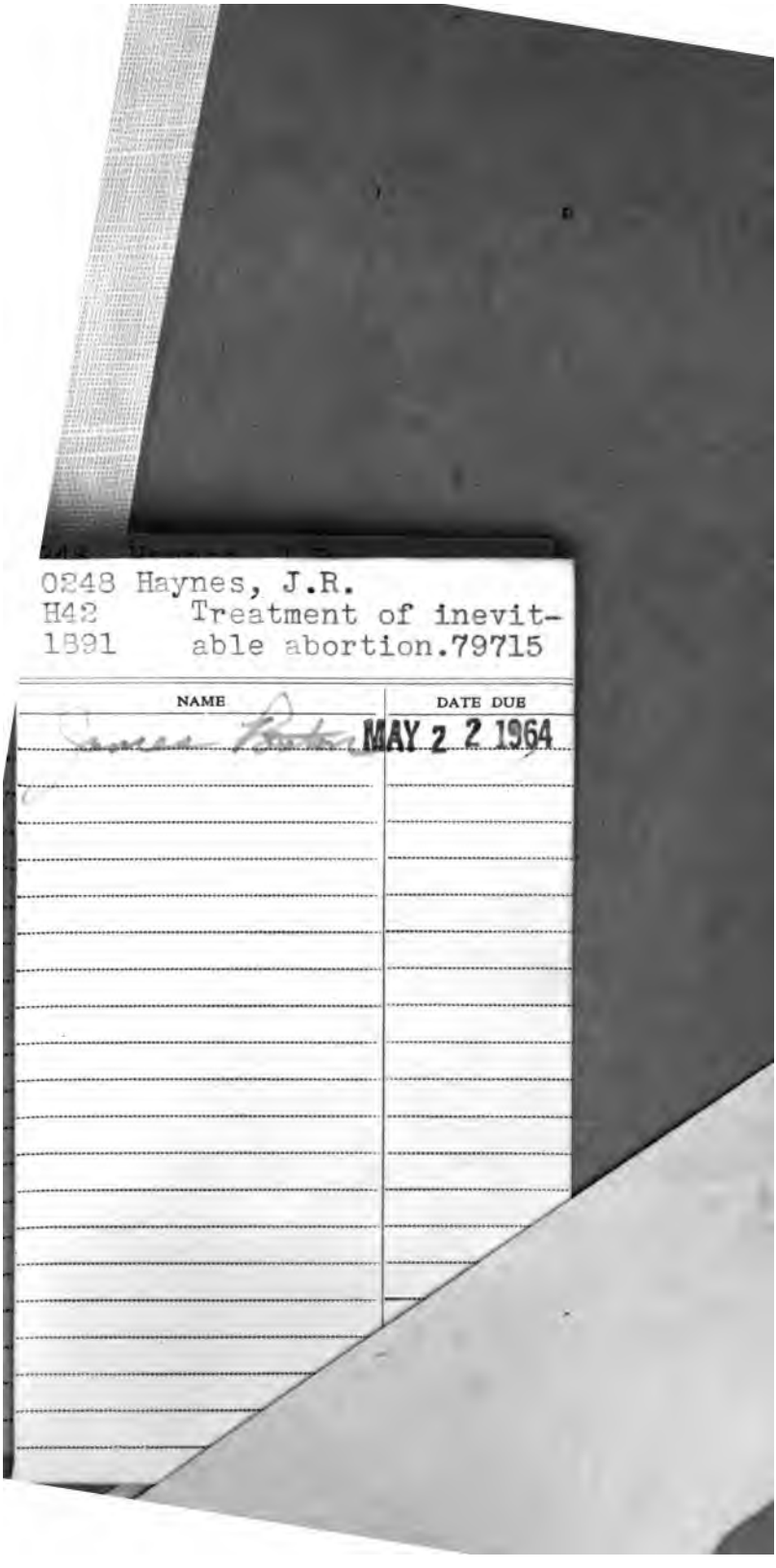
In this case the abdomen should have been opened and thoroughly cleaned out, and the ovaries and tubes extirpated, if diseased.

9. Miscarriage at two months. Dr. A. was called and removed clots and gave some pellets. Shortly after she passed ovum apparently entire. As she still bled, B. came, gave ergot, said that a piece of placenta had been left behind, but that "it would come all right," and "meddlesome midwifery was

bad." Next C. came, and gave ergot and said "it would be all right." Then D. came, ten weeks after the miscarriage, found the patient profoundly anæmic, still bleeding, pulse 150, os closed. Goodell's dilator was used with the aid of anæsthesia, the endometrium thoroughly curetted by the finger nail, and a large piece of decidua loosened and squeezed out by bimanual compression. Rapid recovery.

10. Miscarriage at ten weeks, in a case of old pyosalpinx. As the patient had been bleeding profusely for a month, the uterus was very carefully dilated, and emptied without making the slightest traction. Rapid recovery.

11. Miscarriage at three months. The uterus was not thoroughly emptied, and pelvic peritonitis set in. The patient was etherized and the uterus emptied without disturbing its adhesions by traction. Profuse irrigation, followed by careful disinfection with sublimate solution, then peroxide of hydrogen, then ether-glycerine-iodoform mixture. A rise of temperature after three days was met by renewed disinfection of the endometrium. Recovery.



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